Cryptosporidiosis in black South African children

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Summary

The incidence of cryptosporidiosis in young children was determined by staining of faecal specimens with a modified Kinyoun stain. Seventeen of 92 (18.4%) children with diarrhoea and 1 of 29 (3.4%) controls excreted Cryptosporidium oocysts, suggesting that this was an important enteric pathogen in these children.

CRYPTOSPORIDIUM is a protozoal parasite recently recognised as a cause of diarrhoea in many parts of the world.1-3 A study was undertaken to determine the possible role of this parasite in the aetiology of diarrhoea in children at Baragwanath Hospital, Johannesburg. Studies of the microbial causes of childhood diarrhoea had been performed at this hospital before the recognition of Cryptosporidium as an enteric pathogen in man.4

Patients and methods

Black children < 2 years of age suffering from acute diarrhoea (i.e. duration of < 7 days) who were admitted to a general paediatric ward or to the gastro-enteritis rehydration unit between November 1986 and February 1987 were studied. A single stool specimen was obtained from each child. To avoid the possibility of studying children with hospital-acquired cryptosporidiosis, patients hospitalised within the previous month were excluded, and stool specimens were collected within 48 hours of the child being admitted to hospital. Children without diarrhoea who were admitted to hospital or who were surgical outpatients served as controls.

The faecal specimens were concentrated by a formalin-ether technique, and smears were made on glass slides. These were stained by a modified Kinyoun stain. This entailed staining with cold carbol-fuchsin stain for 3 minutes, decolorising with sulphuric acid, followed by counter-staining with methylene blue for 30 seconds. The slides were examined at 1000 x magnification. Cryptosporidium oocysts, the stage of the life cycle which is present in faeces, were recognised as red-staining round or oval structures approximately 5 µm in diameter with an irregular internal structure. The incidence of other enteric pathogens was not determined.

Statistical methods. The significance of proportions in each group was tested with the chi-square test.

Results

The age and sex distribution of the children with diarrhoea (cases) and the controls are shown in Table I. The frequencies of Cryptosporidium oocyst excretion in these groups are also shown in Table I.

Discussion

It has been shown that at Baragwanath Hospital faecal excretion of Cryptosporidium oocysts is common in young children with diarrhoea, and rare in those without. This has been observed in many other countries, and supports the belief that Cryptosporidium causes diarrhoea.5-7 The results of studies in other countries of the frequencies of Cryptosporidium oocyst excretion in individuals with and without diarrhoea are shown in Table II. Many other studies of the incidence of cryptosporidiosis have utilised faecal specimens submitted to diagnostic laboratories, and have not compared the frequency of Cryptosporidium excretion in diarrhoeal patients with that in normal individuals. In such studies the significance of Cryptosporidium as a cause of diarrhoea cannot be assessed. These studies have been reviewed elsewhere.8

In the RSA, the frequency of cryptosporidiosis has been reported from Johannesburg and Durban. At Coronation Hospital, Johannesburg, Cryptosporidium was found in 3.4% (4/116) of diarrhoeal stool specimens, but normal controls were not studied.9 At King Edward VIII Hospital, Durban, Crypto-
Effect of indapamide on serum and red cell cations, with and without magnesium supplementation, in subjects with mild hypertension

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Summary

Unlike some thiazide diuretics, indapamide — a non-thiazide chlorosulphonamide derivative — has been shown to have a magnesium-sparing effect in normotensive subjects. This effect has not been studied in hypertensive subjects. In a randomised double-blind trial indapamide 2.5 mg and placebo were given daily to a group of elderly patients with mild hypertension, with and without supplemental magnesium chloride. Blood pressure and serum and red blood cell cations were measured. The significant antihypertensive effect of indapamide was confirmed. There was no effect of indapamide on serum and red cell magnesium concentrations compared with placebo, both with and without magnesium supplementation. Indapamide induced hypokalaemia with a shift of sodium into the red cells. In this group of elderly hypertensive subjects indapamide induced potassium but not magnesium loss.


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There are different opinions whether diuretics cause magnesium loss.1-4 Cohen et al.5 found that, contrary to other reports, long-term thiazide treatment did not appear to lead to magnesium deficiency. Numerous studies have shown that disturbances of magnesium metabolism may affect the contractile state of vascular smooth muscle and therefore influence blood pressure.6 Altura and Altura7 suggested that early changes in myocardial and coronary magnesium concentration play an important role in controlling cellular potassium, other electrolytes, coronary vascular tone and normal cardiac rhythm.

Indapamide belongs to the diuretic family and is a non-thiazide chlorosulphonamide with antihypertensive properties; its main site of action is on the distal convoluted tubule.8 Indapamide decreases total body potassium, but these changes were not statistically significant.9 A previous acute study by Reyes et al.10 found that indapamide did not cause urinary magnesium loss in normotensive subjects. However, to our knowledge, no long-term study has been performed in hypertensive subjects comparing in a double-blind fashion the effects of indapamide on serum and red cell magnesium concentrations. Our objective was to study the effects of indapamide, alone and with added magnesium, on blood pressure and serum and red cell cations in subjects with mild hypertension.

Patients and methods

Thirty-five elderly subjects (mean age 61 years; range 43-74 years) with mild hypertension (diastolic blood pressure 95-115

sporidium was found in the stools of 15% (31/206) of children < 2 years with diarrhoea but in none of the 78 controls.13 In this study the difference in the frequencies of faecal excretion of Cryptosporidium oocysts in the diarrhoeal children and controls approached but did not achieve statistical significance at the 5% level. Nevertheless, our findings suggest that Cryptosporidium is an important enteric pathogen in children attending this hospital. At present this information is primarily of epidemiological importance because there is no specific antimicrobial therapy effective in cryptosporidiosis. If such therapy becomes available, however, recognition of this infection will become clinically important.

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REFERENCES